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R-585-7-5-24
SITE INSPECTION OF
STAUFFER-BENTONVILLE SITE
PREPARED UNDER

TDD NO. F3-8312-05
EPA NO. VA-273
CONTRACT NO. 68-01-6699

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

OCTOBER 15, 1985

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY	REVIEWED BY	APPROVED BY
JAMES STRICKLAND	WILLIAM WENTWORTH	GARTH GLENN
ENVIRON. TECHNICIAN	ASSISTANT MANAGER	MANAGER, FIT III

Site Name: Stauffer-Bentonville
TDD No.: F3-8312-05

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APPENDICES

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SECTION 1

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1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-6699. This specific report was prepared in accordance with Technical Directive Document No. F3-8312-05 for the Stauffer-Bentonville site located in Bentonville, Virginia.

1.2 Scope of Work

NUS FIT III was tasked to perform a site inspection of the subject site, concentrating on the content of on-site structures and attempting to access abandoned wells on site, and to submit a formal report to EPA Region III.

1.3 Summary

The Stauffer Chemical Company owned and operated a carbon disulfide manufacturing plant at the facility until its closure in 1950. There is no information available to indicate the actual starting date of the plant. Previous activities at the plant included the manufacturing of 1 primary product, carbon disulfide, at an estimated approximate maximum capacity of 40 tons per day, and a by-product, sodium hydrosulfide resulting from a tail gas recovery system, with an estimated approximate maximum capacity of 20 tons per day. The raw materals that were used in the manufacturing process were generally totally reacted in the process, with the exception of some waste sulfur, residual ash from the reaction, filter sludges from sodium hydrosulfide, and other furnace debris. These wastes that were generated were disposed on site. There are no known records available to indicate the actual waste quantities disposed on site. A fire brick dump is also present to the north of the plant itself. The bricks are from the plant's furnaces and they contain chromium. These bricks may be the major source of chromium, which was found in the adjacent pond (2,400 ug/l).

Previous sampling conducted by the EPA Wheeling Office revealed groundwater contamination of the old well, located on the Stauffer property. This well was used by a private school as a drinking water source until the State Health Department ruled it to be unsafe for human consumption. The school has since been relocated and has obtained a new drinking water well.

FIT III collected 1 home well sample during the February 22, 1984 visit. It was the Thurston home well, which is located south of the Stauffer plant. No immediate danger was revealed from the sampling. Sample results for the home well and other locations are available in section 6.

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SECTION 2

2.0 THE SITE

2.1 Location

The Stauffer-Bentonville site is located off Routes 340 and 613 in Bentonville, Warren County, Virginia (see figure 1, appendix B).

2.2 Site Layout

The Stauffer Chemical Plant covers a total area of approximately 112 acres. Thirteen acres, enclosed within a cyclone fence, make up the production and storage area. Within the 13 enclosed acres, a main building exists, which exhibits major deterioration and damage possibly caused by fire. A concrete sump is located on the western side of the main building. Two concrete carbon disulfide pits are located in front of the building, adjacent to the railroad tracks. A cooling tower is located between the concrete pits and the cyclone fence. Warehouses are located to the north and south of the main building. A concrete pad is found to the east of the northernmost warehouse.

A large, barren area, void of vegetation, is located in the southern corner of the fenced-in area. This barren area, according to Joseph Fromal, Virginia State Water Control Board (VA SWCB), is approximately 0.5 acres in size, and is apparently an ash/sulfur disposal area. A larger ash/sulfur disposal area, approximately 2 acres in size, is located in the vicinity of the brick dump, to the north of the site. The bricks, according to Joseph Fromal, are fire bricks, and are possibly the major source of chromium on site. The 2 ash/sulfur disposal areas are the 2 areas of major concern at the site.

An acid pond is located outside the fenced area to the north. The pond's size is estimated to be approximately 325 feet long and 70 feet wide, and the water is 2 to 3 feet deep. It is believed that the acid is being generated by sulfur reacting with water and is increasing the mobility of the chromium associated with the fire bricks.

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2.3 Ownership History

Stauffer Chemical Company owned and operated a carbon disulfide manufacturing plant at the facility until its closure in 1950. The property has changed hands several times since the closure. The present owner of the property is Mr. Everette L. Habron of St. Davids Church, Virginia. Mr. Habron has no immediate plans for the property.

2.4 Site Use History

Presently, there are no activities occurring at the Stauffer site. Previous activities included the manufacturing of 1 primary product, carbon disulfide, at an estimated approximate maximum capacity of 40 tons per day and a by-product, sodium hyrosulfide resulting from a tail gas recovery system, with an estimated approximate maximum capacity of 20 tons per day. Raw materials included dry sulfur, hardwood charcoal and/or oil coke, and sodium hydroxide 50 percent and coal for fuel with standby fuel oil.

The process consisted of melting the dry sulfur and feeding it in liquid form to cast iron retorts in a bank of furnaces fueled by powdered coal where it was vaporized. The vaporized sulfur reacted with carbon in a reactor section above each retort to form carbon disulfide and hydrogen sulfide. This gas stream passed through various separation and condensation stages to separate the 2 materials and trace sulfur. The primary product received a final distillation and condensation and was stored as a liquid. The hydrogen sulfide passed through an oil absorption system for purification and separation of traces of carbon disulfide and was absorbed with 50 percent sodium hydroxide to produce the by-product sodium hydrosulfide. Residual tail gas was incinerated.

Raw materials coming into the plant have been noted above and were generally totally reacted in the process except for some waste sulfur, residual ash from the reaction, filter sludges from sodium hydrosulfide and other furnace debris whch were disposed of on the property (appendix E, letter dated January 18, 1982).

In a recent telephone conversation, Mr. Bruce McClellan, senior hydrogeologist for Stauffer Chemical (appendix F, telecon dated September 17, 1985) stated that, to the best of his knowledge, the actual disposal locations for the waste that was generated from the manufacturing process included the barren area in the southwestern corner of the fenced-in property and the area in the vicinity of the brick dump. Mr. McClellan also stated that there are no known records available to determine the actual quantity of waste disposed at the facility.

2.5 Permit and Regulatory Action History

There are no permits available pertaining to the Stauffer-Bentonville Plant, which has not been in operation for over 30 years. A site sampling was done by EPA, Wheeling Office, in conjunction with the VA SWCB on September 14, 1982. The sampling of the on-site industrial well, which at the time was being used by a private school, showed the presence of benzene (1,200 ppb), toluene (1,000 ppb), and ethyl benzene (105 ppb). The State Health Department ruled the well unsafe and shut the well down. On January 3, 1983, the school moved across the street where it presently has its own drinking water well.

2.6 Remedial Action To Date

No remedial action has occurred to date at the site.

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SECTION 3

3.0 ENVIRONMENTAL SETTING

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3.1 Water Supply

There is no public water supply system serving the immediate vicinity of the site. All residents use either home wells, usually 20 to 30 feet deep, or cisterns. Some residents may have deeper home wells, such as the Thurston home. During FIT III's inspection of the Stauffer site, on February 22, 1984, a visit was made to the Thurston home, and it was discovered that their well is 400 feet deep. A sample was obtained from the well; the results are available in section 6.0. Those people who employ cisterns as their drinking water source obtain their water from Front Royal Water System, who truck it in for them. Rainwater is also collected in cisterns. Groundwater is not used in the cistern system (see appendix F, telecon dated September 19, 1985). There are 2 deep production wells existing on site (6 inches in diameter, 300 to 400 feet deep).

3.2 Surface Waters

A 340,000-gallon pond exists on site. This pond is a major concern. At a previous testing by EPA on September 14, 1982, the pond exhibited a pH level of 2.4 and chromium levels of 4,500 ug/l. During times of pond overflow, the discharge drains into a ditch, which flows along the railroad tracks north to Flint Run Creek. Flint Run Creek flows in a northeastwardly direction for 5 to 6 miles before it reaches South Fork Shenandoah River. Surface drainage from the southern portion of the site flows southward for approximately 2 miles before reaching the South Fork Shenandoah River. The Shenandoah River is used for a variety of recreational purposes, particularly rafting and canoeing (see appendix F, telecon dated September 18, 1985). Flint Run Creek is a small, shallow running creek. It is not believed to be used for any particular useful purpose (see appendix F, telecon dated September 9, 1985).

3.3 Geology and Soils

According to the General Soil Map of Virginia, 1979, the site is underlain by the Fredrick-Lodi soil type. The soils are shallow to very deep, and formed in residuum from limestone or interbedded limestone, sandstone, and shale. The permeability is moderate to moderately slow. The depth to the limestone bedrock is unknown.

A cross section of a northwest-southeast transect that traverses the Stauffer-Bentonville site and the area adjacent to it indicates that the underlying geology is stratigraphically and structurally complex, a result of extensive deformation through folding and faulting (see appendix I).[1]

This cross section has the site as being underlain by near vertical limestones and dolomites (unit 6) at the nose of a tight anticlinal fold.[1] Assuming the trend of this structure parallels the regional trend, northeast-southwest, bedding northwest of the axial fold plane most likely dips to the northwest while bedding southeast of it dips to the southeast.[3] Cropping out northwest of the limestones and dolomites are shales and limestones (unit 7) and, in turn, shales and sandstones (unit 8).[1] The dip of these 2 units is not indicated; however, as their contacts are generally parallel to bedding as depicted for that of the limestones and dolomites beneath the site, and no faults have been mapped at their contacts, most likely they also steeply dip to the northwest. Accordingly, the thickness of the shales and limestones can be estimated to be 1,200 to 1,300 feet, and that of the shales and sandstones, in excess of 7,000 feet.[1]

Overlying these rocks are scattered, more recent surficial deposits that are reportedly composed of sand, silt, and gravel.[1] The thickest accumulation of these sediments as drawn in the cross section is approximately 100 feet.[1]

A high angle reverse fault bounds the limestones and dolomites found beneath the site, approximately 2,000 to 2,300 feet to the southeast of the site. Dolomites, limestones, and shales (unit 5) adjoin the other side of the fault. Another fault that appears to dip at a parallel angle separates this unit and a unit of quartzite and phyllite (unit 3). A relatively small fault block of non-oxide cemented sandstone (unit 4) is also contacted by this fault, as well as a low angle reverse fault that dips obliquely into it. The quartzites and phyllites are bounded by a steeply dipping reverse fault. Adjoining this fault is granodiorite (unit 1) and greenstone (unit 2).[1] The attitude of bedding within these rocks is not indicated, and as contacts are faulted, any assumption pertaining to the dip and thickness of these units is speculative at best.

An aerial photograph study of the Stauffer-Bentonville property and the surrounding terrain, prepared by the Environmental Photographic Interpretation Center (EPIC), generally concurs with the major lithologic classifications presented in the cross section.[4] In the photograph study, however, sand, clay, and cobbles are mapped as underlying portions of the Stauffer-Bentonville facility.[4] Also, neither carbonate rocks nor metamorphic rocks are as clearly differentiated.

Although it cannot be verified, the lithologies reported in the cross section and the aerial photograph study probably correspond to formal stratigraphic units as mapped by the Virginia Division of Conservation and Economic Development. The limestones and dolomites under the site, as well as the shales and limestones that adjoin them to the northwest, may belong to the Beekmantown Group. The shales and sandstones that crop out even farther northwest may be Middle and Upper Ordovician formations undivided. To the southeast, dolomites, limestones, and shales that adjoin the limestones and dolomites beneath the site may compose the Elbrook Formation. The granodiorite and greenstone are probably part of the Virginia Blue Ridge Complex.[4] The quartzite and phyllite found in the subsurface may be that of the Hampton Formation. The iron oxide cemented sandstone does not fit any lithologic description of rocks mapped in the site area.

The only information on the depth to bedrock in the site area is that obtained on the Thurston well, located less than 1,000 feet south of the site.[2] This well is reported to be 400 feet deep and has been cased 8 feet to limestone bedrock.[2]

3.4 Groundwaters

Information on hydrogeologic conditions in the Stauffer-Bentonville facility area is limited to that documented for the Thurston well, a domestic well located approximately 600 to 800 feet south of the site. This well is reported to have a total depth of 400 feet. It is cased 8 feet to limestone bedrock, the pump is set at 250 feet, and water was measured at a level of approximately 8 feet below ground surface. The flow of water was considered to be artesian for 2 to 3 days following drilling.

The deep construction of the well in bedrock, as well as the initial artesian flow of it, suggests that it is producing from a deep, confined, flow system. In similar limestone aquifers, groundwater occurs and moves through fractures and solution channels formed from fractures. Additionally, these may also be a shallow, unconfined, flow system within the overburden above bedrock and within the upper part of bedrock. However, with depth, the occurrence and movement of groundwater becomes increasingly confined.

As much of the area is underlain by carbonates subjected to extensive structural deformation, hydraulic conductivity between these rocks may be well developed through interconnected fractures and solution channels. Between carbonate rocks and clastic and crystalline rocks, hydraulic interconnection is probably not as well developed.

3.5 Climate and Meteorology

Virginia's annual temperature average ranges from 54°F to 59°F, much of which is determined by distance to the Atlantic Ocean, latitude, and topography. The state lies in the zone of prevailing westerlies where the general motion is from west to east. The annual precipitation for the area of Bentonville is approximately 49 inches. Summer in Virginia is usually warm and humid. Principal sources of moisture are the Gulf of Mexico and the Atlantic Ocean.[5]

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3.6 Land Use

The area surrounding the site is mostly agricultural and residential. The approximate population within a 1/2-mile radius of the site is 330 people.

3.7 Population Distribution

Based upon the United States Geological Survey (U.S.G.S.) topographic map of Bentonville, Virginia quadrangle, 7.5 minute series, there are approximately 330 residents within a 1/2-mile radius of the site. Five-hundred residents live within 1 mile of the site, 772 people live within 2 miles of the site, and 1,227 people reside within 3 miles of the site.

3.8 Critical Environments

There are no critical environments known to exist in the area of the site. The George Washington National Forest is located approximately 2 miles northwest of the site. The Shenandoah National Park is also located approximately 2 miles south of the site (U.S.G.S., Bentonville, Virginia quadrangle, 7.5 minute series).

3.9 References

1. United States Environmental Protection Agency, Wheeling Field Section. Report on Potential Superfund Site - Stauffer Chemical, Bentonville, Virginia. January 12, 1983.

2. Virginia State Water Control Board. Warren County - Bentonville Gulf Station. VRO File no. 24-0440. April 1, 1983.

3. Virginia Department of Conservation and Economic Development, Division of Mineral Resources. Geologic Map of Virginia. 1963.

4. United States Environmental Protection Agency. Environmental Photographic Interpretation Center, Office of Research and Development. Site investigation of Stauffer Chemical Plant, Bentonville, Virginia. Contract no. 68-03-3161, June 1983.

5. National Oceanic and Atmospheric Administration. Climate of Virginia. 1982.

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SECTION 4

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4.0 WASTE TYPES AND QUANTITIES

According to records obtained from the Stauffer Chemical Company (see appendix E), which is located in Westport, Connecticut, the Bentonville site manufactured 1 primary product, carbon disulfide. Raw materials that were used in the manufacturing process were generally totally reacted in the process, except some waste sulfur, residual ash, filter sludges, and other furnace debris, which were disposed on the property. These wastes, according to Mr. Bruce McClellan, (appendix F, telecon dated September 7, 1985) of Stauffer, were disposed in 2 areas on site. One area, approximately 0.5 acres in size, is in the southwest corner of the property. The other disposal area is to the north of the site, near the bricks dump. According to Mr. McClellan, no known records are available to indicate the actual waste quantities. The disposed bricks which are fire bricks according to Joseph Fromal, contain chromium and may be the major source of chromium on the site. A 340,000-gallon acid pond is located adjacent to the brick dump. This pond works as a detention pond for water that has come in contact with the bricks. Previous sampling by EPA revealed a pH of 2.4. The EPA samples contained a significant quantity of chromium (2,400 ug/l).

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SECTION 5

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5.0 FIELD TRIP REPORT

5.1 Summary

On February 22, 1984, FIT III team members Eugene Dennis, David Walker, Loren Lasky, and James Strickland visited the subject site to perform the site inspection as tasked. Weather conditions were clear and sunny. Temperatures were in the high 40s to low 50s.

5.2 Persons Contacted

5.2.1 Prior to Field Trip

Joseph A. Fromal, III
Pollution Control Engineer
Commonwealth of Virginia State
Water Control Board
Valley Regional Office
P.O. Box 268
Bridgewater, VA 22812
(703) 828-2595

Everett Habron
(Plant Site Owner)
Saint Davids Church, VA 22652
(703) 459-3682

5.2.2 At The Site

Joseph A. Fromal, III
Pollution Control Engineer
Commonwealth of Virginia State
Water Control Board
Valley Regional Office
P.O. Box 268
Bridgewater, VA 22812
(703) 828-2595

Everett Habron
(Plant Site Owner)
Saint Davids Church, VA 22652
(703) 459-3682

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EPA Number VA - 273

5.3 SAMPLE LOG

Site Name Stauffer Bentonville

TRAFFIC REPORTS Organic	Inorganic	High Hazard	SAMPLING LOCATION	PHASE	SAMPLE DESCRIPTION	DATE	TIME	pH	COMMENTS/OBSERVATIONS	LABORATORY
C-4850	MC 3782		Spring # 1	Aq	Surface Water	2-22-84	1030			Rocky Mt / Chemtech
C-7953	MC 3788		Spring # 2	Aq	Surface Water		1120			"
C-7954	MC 3789		Acid Pond	Aq	Surface		1410			"
C-7956	MC 3791		Acid Pond Drainage	Aq	Surface Water		1210			"
C-7958	MC 3793		R.R. Drainage Up.	Aq	Surface Water		1225			"
C7960	MC 3795		RR. Drainage Down	Aq	Surface Water		1200			"
C-7963	MC 3799		Lower Pond Discharge	Aq	Surface Water		1350			"
C7966	MC 3802		Dunston Well	Aq	Home Well		1515			"
C 7968	MC 3801		Blank	Aq	Distilled water H.P.L.C. Water		0900			"
C-7949	MC 3783		Spring # 1	Sol	Sediment		1030			Rocky Mt comp. chem / Chemtech
C7949	MC 3784		RR Sediment - Above Mouth	Sol	Sediment		1050			"
C 7950	MC 3785		RR. Sediment - Below Mouth	Sol.	Sediment		1055			"
C7951	MC 3786		Marsh Sediment	Sed	Sediment		1100			"
C7952	MC 3787		Spring # 2 Sed.	Sol	Sediment		1120			"
C-7955	MC 3790		Acid Pond	Sol	Sediment		1410			"
C-7957	MC 3792		Acid Pond Drainage	Sol	Sediment		1210			"
C-7959	MC 3794		R.R. Drainage - Upstream	Sol	Sediment		1225			"
C7961	MC 3796		RR Drainage Downstream	Sol	Sediment		1200			"
C7962	MC 3797		Lower Pond Inflow	Sol	Sediment		1345			"
C-7963	MC 3799		Lower Pond Discharge	Sol	Sed		1350			"

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5.4 Site Observations

- HNU readings never exceeded background of 1 ppm.
- Mini-alert readings never exceeded background.
- The well located near the carbon disulfide pits could not be sampled because its rusted pump could not be removed to obtain the sample.
- A metal plate is located on the well shed floor, beside the rusted pump. A future sample from the well can be obtained by removing the metal plate.
- A small amount of runoff was observed leaving the acid pond and running into the drainage ditch that ran along the railroad tracks.
- All water from the drainage ditch lead to the lower pond, whose discharge lead to Flint Run Creek.
- The main building on site exhibited major deterioration and damage due to possible fire.
- The main building was observed to have small trees and other vegetation going in it.
- The 2 carbon disulfide pits contained approximately 12 inches of water and there was vigorous vegetation growth in both.
- A large barren area, void of vegetation, was observed in the southwestern corner of the fenced-in property.
- Two water springs (seeps) were observed emanating from the southern portion of the property.

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EPA Number VA - 273

5.3 SAMPLE LOG

Site Name Stauffer - Rentonville

TRAFFIC REPORTS Organic	TRAFFIC REPORTS Inorganic	TRAFFIC REPORTS High Hazard	SAMPLING LOCATION	PHASE	SAMPLE DESCRIPTION	DATE	TIME	pH	COMMENTS/OBSERVATIONS	LABORATORY
C7965	MC3801		Pit Sediment	Sol	Sediment	2-22-84	1430			Mead Compan Tech Chemtech
C7967	MC3803		Sump Sediment	sol	Sediment	"	1600			"
C7969	MC3805		Blank	sol	Sediment	"	0700			"
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- Surface water from spring no. 2 was noted to be passing through the barren area and leading to the marsh area.

- Large amounts of soil were observed to have been eroded from the barren area as a result of spring no. 2 discharge. A channel way, approximately 2 feet in depth and leading from the spring (photo no. 7), was observed.

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F3-8312-05

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
VA	273

II. SITE NAME AND LOCATION

01 SITE NAME (Legal common or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Stauffer Chemical Company	U.S. Highway 340				
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 COUNTY**	**07 COUNTY CODE**	**08 CONG. DIST.**
Bentonville	VA	22612	Warren	187	VA07

09 COORDINATES		10 TYPE OF OWNERSHIP (Check one)
LATITUDE	LONGITUDE	☒ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER _____ ☐ G. UNKNOWN
38° 49' 55"	78° 18' 15"	

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
02/22/84 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	-- (BEGINNING YEAR) 1950s (ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corporation (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)

☐ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
Eugene Dennis	Geologist	NUS Corp.	(215) 687-9510
09 OTHER INSPECTORS	**10 TITLE**	**11 ORGANIZATION**	**12 TELEPHONE NO**
James Strickland	Environmental Technician	NUS Corp.	(215) 687-9510
David Walker	Geologist/Engineer	NUS Corp.	(215) 687-9510
Loren Lasky	Geologist	NUS Corp.	(215) 687-9510
Joseph Fromal	Site Coordinator	State Water Control Board	(703) 828-2595
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Everett L. Habron	site owner	Fort Valley Route St. Davids Church, VA 22652	(703) 459-3682
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	8:30 A.M.	Clear and sunny, 45°F to 50°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO
Darius Ostrauskas	U.S. EPA	(215 587-3435

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
James Strickland	NUS Corp.	FIT III	215-687-9510	01/10/85 (MONTH DAY YEAR)

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
VA	273

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- X A SOLID
- X B POWDER, FINES
- C SLUDGE
- D OTHER _____ (Specify)
- E SLURRY
- F LIQUID
- G GAS

02 WASTE QUANTITY AT SITE
(Measures of waste quantities must be independent)

TONS unknown
CUBIC ~~YARDS~~ feet _____
NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- X A TOXIC
- B CORROSIVE
- C RADIOACTIVE
- D PERSISTENT
- E SOLUBLE
- F INFECTIOUS
- G FLAMMABLE
- H IGNITABLE
- I HIGHLY VOLATILE
- J EXPLOSIVE
- K REACTIVE
- L INCOMPATIBLE
- M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	unknown		
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
	Lead	7439-92-1	sediment in sump area	32.9	mg/kg
	Cyanide	57-12-5	spring sample (aqueous)	16	ug/l
	Chromium	7440-47-3	acid pond discharge (aq)	2,553	ug/l
	PCB 1260	11096-82-5	sediment of lower pond	260	ug/kg
	Benzene	71-43-2	well sample	1,200	ug/l
	Ethylbenzene	100-41-4	well sample	105	ug/l
	Toluene	108-88-3	well sample	1,000	ug/l

V. FEEDSTOCKS (See Appendix for CAS Numbers) N/A

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis reports)

EPA FORM 2070-13(7-81)

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EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
VA	273

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: unknown — 04 NARRATIVE DESCRIPTION

Sampling conducted by EPA, Wheeling office, discovered the presence of benzene, toluene, and ethyl benzene in the well used by the school, which is on site. The school well was closed January 3, 1983.

01 ☒ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: 5/12/83) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

The acid pond experiences intermittent overflow to surface waters (Flint Creek). Flint Run Creek sample revealed C-6 ug/l (downstream), 4 ug/l upstream aqueous sample. Sample taken by VA SWCB (appendix G).

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☒ E. DIRECT CONTACT — 02 ☒ OBSERVED (DATE: 2-22-84) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

The acid pond is accessible to the public; no physical barrier is present.

01 ☐ F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) — 04 NARRATIVE DESCRIPTION

01 ☒ G. DRINKING WATER CONTAMINATION — 02 ☒ OBSERVED (DATE: 9-14-82) ☐ POTENTIAL ☒ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: approx. 12 — 04 NARRATIVE DESCRIPTION

Sampling of the private religious school, which was located in the old office building on Stauffer property, revealed the presence of benzene, ethyl benzene, and toluene. The school well was closed by the health department on January 3, 1983.

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

Unknown

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: VA | 02 SITE NUMBER: 273

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 [X] J. DAMAGE TO FLORA
02 [X] OBSERVED (DATE: 2-22-84) [ ] POTENTIAL [X] ALLEGED
04 NARRATIVE DESCRIPTION
Reportedly visible in infrared aerial photos taken by EPIC (contact: Dick Parks, 703-557-3110) are many areas that are void of vegetation.

01 [ ] K. DAMAGE TO FAUNA
02 [ ] OBSERVED (DATE: _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)
Unknown

01 [ ] L. CONTAMINATION OF FOOD CHAIN
02 [ ] OBSERVED (DATE: _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

01 [X] M. UNSTABLE CONTAINMENT OF WASTES (Spills Runoff Standing liquids Leaking drums)
02 [ ] OBSERVED (DATE: 2/22/84) [X] POTENTIAL [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: unknown
04 NARRATIVE DESCRIPTION
On-site acid pond discharges off site during times of overflow.

01 [X] N. DAMAGE TO OFFSITE PROPERTY
02 [ ] OBSERVED (DATE: 2/22/84) [X] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
On-site spring (no. 2) is eroding soil from within the fenced in property, to the adjacent property to the south of the site.

01 [ ] O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
02 [ ] OBSERVED (DATE: _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

01 [ ] P. ILLEGAL/UNAUTHORIZED DUMPING
02 [ ] OBSERVED (DATE: _____) [ ] POTENTIAL [ ] ALLEGED
04 NARRATIVE DESCRIPTION
Unknown

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 500 within 1-mile radius

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
EPA, Wheeling office, site inspection report, January 4, 1983

EPA FORM 2070-13 (7-81)

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
VA	273

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☒ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☒ E. TANK, BELOW GROUND	2	concrete pits
☐ F. LANDFILL		
☒ G. LANDFARM		2.5 acres
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCINERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

☒ A. BUILDINGS ON SITE
3 warehouses - shed

06 AREA OF SITE
up to 112 (Acres)

07 COMMENTS

The below-ground tanks, as referenced above, are 2 concrete pits which stored CS_2.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

A cyclone fence surrounds approximately 13 acres of the old chemical plant. The other 100 acres have no physical barrier and are easily accessible.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

NUS FIT III site inspection of February 22, 1984
EPA, Wheeling office, site inspection report of January 4, 1983

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: VA | 02 SITE NUMBER: 273

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)	SURFACE	WELL	02 STATUS: ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☐	B. ☐	A. ☐	B. ☐	C. ☐	A. _____ (mi)
NON-COMMUNITY	C. ☐	D. ☒	D. ☐	E. ☒	F. ☐	B. on site (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING ☒ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER: 330 within 1/2 mile

03 DISTANCE TO NEAREST DRINKING WATER WELL: on site (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQ
approx 20 (ft)	northeast to southwest	Unknown (ft)	50 (gpd)	☐ YES ☐ NO maybe

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)

Variable in depth
cased through overburden, uncased through bedrock

10 RECHARGE AREA		11 DISCHARGE AREA	
☒ YES ☐ NO	COMMENTS: precipitation and infiltration	☐ YES ☐ NO	COMMENTS: Unknown

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Flint Run Creek	☐	100 feet (ft)
South Fork Shenandoah River	☐	approx. 5 (mi)
	☐	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 570 NO OF PERSONS	B. 1,010 NO OF PERSONS	C. 1,615 NO OF PERSONS

02 DISTANCE TO NEAREST POPULATION: 100 feet (ft)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE: 266

04 DISTANCE TO NEAREST OFF-SITE BUILDING: 100 feet (ft)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

The population within 1/2 mile of the site is approximately 330 people.
The area surrounding the site is mainly agricultural and rural.

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: VA | 02 SITE NUMBER: 273

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

unknown ☐ A. 10^{-6} – 10^{-8} cm/sec ☒ B. 10^{-4} – 10^{-6} cm/sec ☐ C. 10^{-4} – 10^{-3} cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

unknown ☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
Unknown (ft)	Unknown (ft)	Unknown	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
49 (in)	3 (in)	0 to 15 %	northeast to southwest	0 to 15 %

09 FLOOD POTENTIAL: N/A — SITE IS IN _____ YEAR FLOODPLAIN

10 N/A ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. _____ (mi)	B. _____ (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

_____ (mi)

ENDANGERED SPECIES: Unknown

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A. 3 (mi)	B. 1/4 (mi)	C. _____ (mi)	D. 1/4 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The site is located within an agricultural and semi-rural area. The total area of the site is approximately 112 acres, with 13 acres located within a cyclone fence. There are approximately 570 people living within 1 mile of the site.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS FIT III site inspection of February 22, 1984
SI Form - EPA (Wheeling Office), January 4, 1983

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
VA	273

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILAB
GROUNDWATER	3	Org: Rocky Mtn. Analytical Lab, Inorg: Chemtech	Presently
SURFACE WATER	5	Inorganics: Chemtech	Presently
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	13	Org: Mead CompuChem, Inorg: Chemtech	Presently
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
HNU	No readings were recorded above background
Radiation mini-alert	No readings were recorded above background.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF NUS Corporation/ EPA
(Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS NUS Corporation

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

N/A

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS FIT III site inspection of February 22, 1984

EPA FORM 2070-13 (7-81)

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
VA	273

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Mr. Everett Habron		Fort Valley Route		Saint Davids Church	VA	22652
N/A						
N/A						
N/A						

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE
N/A						
N/A						
N/A						
N/A						

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Stauffer Chemical Company		Nyala Farms Road		Westport	CT	06881
N/A						
N/A						
N/A						

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
N/A						
N/A						
N/A						
N/A						

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA. Report on Potential Superfund Site: Stauffer Chemical Company, Bentonville, Virginia. January 12, 1983

ORIGINAL
(Red)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
VA	273

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER
Stauffer Chemical Company	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Nyala Farms Road	

05 CITY	06 STATE	07 ZIP CODE
Westport	CT	06881

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER
N/A	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER
N/A	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA. Report on Potential Superfund Site: Stauffer Chemical, Bentonville, Virginia. January 12, 1983

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
VA	273

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Stauffer Chemical Company		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
Nyala Farms Road			
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
Westport	CT 06881		
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
N/A		N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA. Report on Potential Superfund Sites, Stauffer Chemical Company, Bentonville, Virginia. February 12, 1983.

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
VA	273

II. PAST RESPONSE ACTIVITIES

01 ☒ A. WATER SUPPLY CLOSED — 02 DATE 1-3-83 — 03 AGENCY EPA
04 DESCRIPTION
Drinking well located on site was closed because of the presence of benzene, toluene, and ethyl benzene.

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ F. WASTE REPACKAGED — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ H. ON SITE BURIAL — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ L. ENCAPSULATION — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ N. CUTOFF WALLS — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE — 03 AGENCY
04 DESCRIPTION
Unknown

ORIGINAL (Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
VA	273

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
Unknown

01 ☒ 2. POPULATION RELOCATED — 02 DATE 1-3-83 — 03 AGENCY _____
04 DESCRIPTION
School operating on site moved its location because of contaminated drinking well.

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA site inspection report of January 12, 1983.

ORIGINAL
(Red)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
VA	273

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

January 3, 1983 - The state Health Department closed the drinking water well used by the school on site. The school later relocated. The source of contamination did not appear to be from Stauffer, but possibly from the gasoline station nearby (appendix H, letter from SWCB, dated April 1, 1983).

III. SOURCES OF INFORMATION *(Cite specific references, e.g., state files, sample analysis, reports)*

EPA site inspection report of January 3, 1983.

ORIGINAL
(Red)

SECTION 6

TDD Number F3-631205
EPA Number VA-373

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☒ Organic ☐ Inorganic

Site Name Stauffer Chem. Co
Date of Sample 2-23-84

Solid sample results reported as dry weight.

Sample Number	Sample Description and Location	Phase	Units	Compounds Detected: Fluoranthene	bis(2-ethylhexyl)Phalate	benzyl butyl phthalate	benzo(A)Pyrene	benzo(b)Fluoranthene	Chrysene	benzo(ghi)perylene	Phenanthrene	INDENO(1,2,3-cd)Pyrene	Pyrene	Chloroform	Methylene Chloride	benzo(A)Anthracene	Remarks
C-7948	Spring #1	Sol	ug/Kg											8.9◇			
C-7949	R.R. Sediment Above Marsh	Sol	ug/Kg											42◇			
C-7950	R.R. Sediment below Marsh	Sol	ug/Kg	2200							1500		2000	5.8◇			
C-7951	Marsh Sed	Sol	ug/Kg											6.7◇			
C-7952	Spring #2	Sol	ug/Kg											16◇			
C-7955	Acid Pond Sed.	Sol	ug/Kg											6◇			
C-7957	Acid Pond Drainage	Sol	ug/Kg											6◇			
C-7959	R.R. Drainage Sed Upstream	Sol	ug/Kg	940					<590		770		1100	7◇			
C-7961	R.R. Drainage Sed Downstream	Sol	ug/Kg	<560					<560				<560	49◇			
C-7962	Lower Pond Inflow	Sol	ug/Kg											5◇			
C-7964	Lower Pond Discharge	Sol	ug/Kg											<4◇			
C-7965	Pit Sed	Sol	ug/Kg											<4.25◇			
C-7967	Sump Sed	Sol	ug/Kg											24◇			
C-7969	BLANK	Sol	ug/Kg										<2.5	8			

ORIGINAL (Red)

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

TDD Number F2-8312-05

EPA Number VA-873

SAMPLE ANALYSIS SUMMARY
TARGET COMPOUNDS

☒ Organic ☐ Inorganic

Site Name Stauffer Chem. Co.

Date of Sample 2-23-84

Solid sample results reported as dry weight.

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Acetone	2-hexanone	Endrin Aldehyde	α-BHC	Fluorotrichloromethane	4,4'-DDT	dibenzofuran	Naphthalene	di-n-octylphthalate	PCB 1260	Remarks
C-7946	Spring #1	SOL	ug/kg								1200◇			
C-7949	Rail Road Sed. Above Marsh	SOL	ug/kg				14◇							
C-7950	R.R. Sediment below Marsh	SOL	ug/kg						<920	<920				
C-7951	Marsh Sed	SOL	ug/kg											
C-7952	Spring #2	SOL	ug/kg				<8◇							
C-7955	Acid Pond Sed	SOL	ug/kg											
C-7957	Acid Pond Drainage	SOL	ug/kg											
C-7959	R.R. Drainage Sed. Upstream	SOL	ug/kg											
C-7961	R.R. Drainage Sed Down Stream	SOL	ug/kg				<3.25◇							
C-7962	Lower Pond Inflow	SOL	ug/kg				3◇	980◇				260		
C-7964	Lower Pond Discharge	SOL	ug/kg				6◇							
C-7965	Pit Sediment	SOL	ug/kg				<4.25◇							ORIGINAL (Red)
C-7967	Sump Sed	SOL	ug/kg									220		
C-7969	BLANK	SOL	ug/kg				6							

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

TDD Number F3-831205
EPA Number VA-373

☒ Organic ☐ Inorganic

Site Name Stauffer Chem Co
Date of Sample 2-23-84

II- Indistinguishable Isomers

II Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Fluoranthene	bis(2-ethylhexyl)phthalate	benzyl butyl phthalate	benzo(a)anthracene	benzo(a)Pyrene	benzo(b+or k)Fluoranthene	Chrysene	benzo(gh.)Perylene	Phenanthrene	Indeno(1,2,3-cd)Pyrene	Pyrene	Chloroform	Methylene Chloride	Remarks
C-4850	Spring #1	Aq	ug/L			1K ◇						1K			1K ◇		
C-7953	Spring #2	Aq	ug/L														
C-7954	Acid Pond	Aq	ug/L														
C-7956	Acid Pond Discharge	Aq	ug/L		7K ◇												
C-7958	R.R. Drainage UPSTREAM	Aq	ug/L														
C-7960	R.R. Drainage DOWNSTREAM	Aq	ug/L	3K			3K	2K	8K	4K	1K ◇	1K ◇	2K	3K ◇		2K ◇	
C-7963	Lower Pond Discharge	Aq	ug/L													8 ◇	
C-7966	THORSTON Well	Aq	ug/L														
C-7968	BLANK	Aq	ug/L												4K	4B	

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

K-Approximate value: detected below quantitation limit.

ORIGINAL (Red)

TDD Number F3-8312-05
EPA Number VA-273

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☒ Organic ☐ Inorganic

Site Name Stauffer Chem Co.
Date of Sample 2-23-84

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Acetone	2-hexanone	endrin aldehyde	α-BHC	Fluorotrichloromethane	4,4'-DDT	dibenzofuran	Naphthalene	di-n-octylphthalate					Remarks
C-4850	Spring #1	Aq	ug/L	5K ◇													
C-7953	Spring #2	Aq	ug/L														
C-7954	Acid Pond	Aq	ug/L	15 ◇			0.004K ◇										
C-7956	Acid Pond Discharge	Aq	ug/L	3K ◇													
C-7958	R.R. Drainage Upstream	Aq	ug/L														
C-7960	R.R. Drainage Downstream	Aq	ug/L	23 ◇													
C-7963	Lower Pond Discharge	Aq	ug/L														
C-7966	Thurston Well	Aq	ug/L	4K ◇													
C-7968	BLANK	Aq	ug/L			0.04											

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

K-Approximate value: detected below quantitation limit.

ORIGINAL (Red)

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

DD Number F3-8312-05
PA Number VA-273

☐ Organic ☒ Inorganic

Site Name Stauffer Chemical Co.
Date of Sample 2-22-84

Sample Number	Sample Description and Location	Phase	Units	Compounds Detected: Aluminum	Chromium	Barium	Beryllium	Cobalt	Copper	Iron	Nickel	Manganese	Zinc	Boron	Vanadium	Silver	Remarks
MC 3782	Spring #1	Aq	ug/L	121000	118		9 ◇	104	441	23350	182	13530	492				
MC 3783	Spring #1	Sol	mg/Kg	2378	8.3	47.9	0.26 ◇		7.6	10010		117	5.7		20.3		
MC 3784	R.R. Sediment Above Marsh	Sol	mg/Kg	2436	9.9	245			12.6	9115	3.4	17	10.1		18		
MC 3785	R.R. Sediment Below Marsh	Sol	mg/Kg	866	3.8	16.6			19.6	3119	13	21.5	13.7				
MC 3786	Marsh Sed.	Sol	mg/Kg	7225	12.1	98.6	1.1 ◇		11.3	19990	3.2	147	18.3		31.6		
MC 3787	Spring #2	Sol	mg/Kg	1843	5.2	463		3.2	23.8	8880	380	104	8.5				
MC 3788	Spring #2	Aq	ug/L	12240	10	227				8638		1024	78				
MC 3789	Acid Pond	Aq	ug/L	38910	542		6 ◇	69	100 ◇	49990	96	6445	692				
MC 3790	Acid Pond	Sol	mg/Kg	6355	25.5	51.7	0.38 ◇		10.1	11535	2.0	26.0	8.2		27.5		
MC 3791	Acid Pond Discharge	Aq	ug/L	90670	2553	113	10 ◇	61	233	151300	191	17570	1874	126			
MC 3792	Acid Pond Discharge	Sol	mg/Kg	6850	19.2	132	0.75 ◇	10.6	30.6	11095	19	38.3	25.9	5.4	16.9		
MC 3793	R.R. Drainage UPSTREAM	Aq	ug/L	1178						805		69	28 ◇				
MC 3794	R.R. Drainage UPSTREAM	Sol	mg/Kg	6155	8.9	48.4	0.68 ◇	3.4	33.6	9420	2.8	47.7	35.4		19.1		
MC 3795	R.R. Drainage Downstream	Aq	ug/L	24670	564				111 ◇	40730		2484	286				

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

ORIGINAL (Red)

TDD Number F3-8312-06

EPA Number VA-273

SAMPLE DATA SUMMARY
TARGET COMPOUNDS

☐ Organic ☒ Inorganic

Site Name Stauffer Chemical

Date of Sample 2-22-84

Sample Number	Sample Description and Location	Phase	Units	Compounds Detected: Arsenic	Antimony	Selenium	Thallium	Mercury	Tin	Cadmium	Lead	Ammonia	Cyanide	Sulfide			Remarks
nc 3782	Spring #1	Aq	ug/L							2.7 ◇	8 ◇						
nc 3783	Spring #1	Sol	mg/Kg	2.8		0.20		0.15		0.06 ◇	11.0		0.25				
nc 3784	R.R. Sediment Above Marsh	Sol	mg/Kg	4.4		0.30				0.06 ◇	29.5						
nc-3785	R.R. Sediment Below Marsh	Sol	mg/Kg	1.0					1.2 ◇	0.10 ◇	19.7						
nc 3786	Marsh Sed.	Sol	mg/Kg	4.4		0.25				0.09 ◇	25.3						
nc 3787	Spring #2	Sol	mg/Kg	0.58		0.10			1.8 ◇	0.20	18		0.775				
nc 3788	Spring #2	Aq	ug/L								3 ◇		16				
nc 3789	Acid Pond	Aq	ug/L							3.0	12 ◇						
nc 3790	Acid Pond	Sol	mg/Kg	1.6		0.20				0.08 ◇	10						
c 3791	Acid Pond Discharge	Aq	ug/L							4.8	72						
c 3792	Acid Pond Discharge	Sol	mg/Kg	8.5		0.45				0.09 ◇	19		0.65				
nc3793	R.R. Drainage Upstream	Aq	ug/L								6 ◇		14				
c 3794	R.R. Drainage Upstream	Sol	mg/Kg	9.2		0.15				0.15	23.6						
c 3795	R.R. Drainage Downstream	Aq	ug/L					0.2		1.2 ◇			12				

ORIGINAL (Red)

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

DD Number F3-8312-06
EPA Number VA-373

PLE A SU Y
TARGET COMPOUNDS

☐ Organic ☒ Inorganic

Site Name Stauffer Chemical Co.
Date of Sample 2-22-84

Compounds Detected

Sample Number	Sample Description and Location	Phase	Units	Arsenic	Antimony	Selenium	Thallium	Mercury	Tin	Cadmium	Lead	Ammonia	Cyanide	Sulfide			Remarks
MC 3796	R.R. Drainage Downstream	Sol	mg/kg	10		0.35				0.07◇	25.5		4.25				
MC3797	Lower Pond INFLOW	Sol	mg/kg	10.9		0.30				0.09◇	14		0.35				
MC3798	Lower Pond Discharge	Aq	ug/L							2.2◇	26◇						
MC3799	Lower Pond Discharge	Sol	mg/kg	2.0						0.17	4.7						
MC3801	Pit Sediment	Sol	mg/kg	1.3		0.40				0.19	19.4		0.25				
MC3802	Thurston Wall	Aq	ug/L														
MC3803	Sump Sediment	Sol	mg/kg	21.7	3.4				18.8	0.59	32.9		0.30				
MC3804	BLANK	Aq	ug/L														
MC7969	BLANK	Sol	mg/kg														

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

ORIGINAL (Red)

TDD Number F3-8312-06
EPA Number VA-873

SA DA MMA
TARGET COMPOUNDS

☐ Organic ☒ Inorganic

Site Name Stauffer Chemical Co.
Date of Sample 2-22-84

Sample Number	Sample Description and Location	Phase	Units	Compounds Detected: Aluminum	Chromium	Barium	Beryllium	Cobalt	Copper	Iron	Nickel	Manganese	Zinc	Boron	Vanadium	Silver	Remarks
mc 3796	R.R. Drainage Downstream	SOL	mg/kg	4650	144	194	0.71 ◇		22.2	28055	4.2	45.7	15.6	9.4	39.5		
mc 3797	Lower Pond Inflow	SOL	mg/kg	5415	23.1	65.4	0.58 ◇	4.7	21.9	15745	8.7	44.2	19.8		27.7		
mc 3798	Lower Pond Discharge	Aq	ug/L	21550	883			60	106 ◇	46150	63	6224	677				
mc 3799	Lower Pond Discharge	SOL	mg/kg	13355	22.8	12.7	1.1 ◇	3.4	40.9	24635	18.5	76.1	32.9		58.5		
mc 3801	Pit Sediment	SOL	mg/kg	5510	10.8	210	0.77 ◇		32.6	6200	3.0	34.4	13.4		15.6		
mc 3802	Thurston Well	Aq	ug/L							63 ◇			16 ◇				
mc 3803	Sump Sediment	SOL	mg/kg	356	53.5	45.8		7.5	165	203200	78.9	542	52.4	16.6			
mc 3804	BLANK	Aq	ug/L														
mc 7969	BLANK	SOL	mg/kg							2.7							

NOTE: For a review of this data and non-target, tentatively identified compounds, please see the Analytical Quality Assurance section of this report.

◇ Denotes results of questionable qualitative significance based upon quality assurance review of data.

ORIGINAL (Red)

6.0 LABORATORY DATA

ORIGINAL
(Red)

6.1 Sample Data Summary

6.2 Quality Assurance Review

ORIGINAL (Red)

6.2.1 Organic Data: Lab Case 2421

6.2.1.1 Introduction

The findings offered in this report are based upon a review of all available organic sample data generated by 2 CLP laboratories. One laboratory analyzed 9 low aqueous samples, the other laboratory analyzed 14 low soil samples. Blank analyses results, surrogate and matrix spike recoveries, duplicate analysis results, evaluation of GC confirmations, and target compound matching quality were examined in detail.

6.2.1.2 Qualifiers

It is recommended that this data package be utilized only with the following qualifier statements:

- All positive results for methylene chloride, fluorotrichloromethane, acetone, di-n-octyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, 4,4'-DDT, and alpha-BHC are questionable.

- The reported results for pyrene, phenanthrene, and benzo(ghi)perylene in sample C7960 are questionable.

The aforementioned results were designated questionable because there is evidence to doubt the presence of these compounds at concentrations less than or similar to the levels reported. However, with certain exceptions, it can be assumed that concentrations significantly greater than the levels reported cannot be present.

- The laboratory which performed analysis of solid samples neglected to report 2 confident identifications of PCB 1260 in samples C7962 and C7967. These results have been incorporated into the sample data summary.

- The actual detection limits for all pesticides in samples C7962 and C7967 are 10 times higher than reported.

- The actual detection limits for most acid compounds in all aqueous samples, except samples C7958, C7960, and C7966, may be substantially higher than reported.

- The actual detection limit for pentachlorophenol in sample C7962 may be substantially higher than reported.

- Although the presence of 4,4'-DDT was questioned in sample C7962, if this compound is present the actual concentration may be higher than reported.

- The actual detection limits for some BN compounds in sample C7967 may be slightly higher than reported.

- Per EPA request, tentatively identified compounds which were reported by the laboratory are not included in this report.

6.2.1.3 Findings

- Blank analysis revealed the presence of methylene chloride, fluorotrichloromethane, acetone, di-n-octyl phthalate, benzyl butyl phthalate, bis(2-ethylhexyl) phthalate, pyrene, phenanthrene, and benzo(ghi)perylene at levels sufficient to question the aforementioned results for these compounds.

- All positive results for single peak pesticides were questioned because these compounds are identified as single peaks on dual GC columns, and thus may be artifacts of chromatographic interferences.

- Examination of pesticides chromatograms for samples C7962 and C7967 revealed the characteristic pattern for PCB 1260. The laboratory was not requested to quantitate these findings since available documentation enabled the reviewer to quantitate this compound. These concentrations have been incorporated into the sample data summary.

ORIGINAL (Red)

- The laboratory performed a 10 times dilution on the pesticide extracts and did not adjust their reported detection limits appropriately for these dilutions.

- Zero recoveries were reported for all 3 acid surrogate compounds in all aqueous samples except samples C7958, C7960, and C7966.

- Zero recoveries were reported for the matrix spike compounds pentachlorophenol and 4,4'-DDT in sample C7962.

- Low recoveries were reported for 1 BN surrogate compound and 1 acid surrogate compound in sample C7967.

- Tentatively identified compounds were evaluated only for possible target compound identifications.

6.2.1.4 Summary

The attached Quality Assurance Review has identified the aforementioned areas of concern. Please see the accompanying Support Documentation appendix for specifics on this Quality Assurance Review.

Report prepared by Rock J. Vitale Date: December 4, 1984

6.2.2 Inorganic Data: Lab Case 2421

6.2.2.1 Introduction

The findings offered in this report are based upon a general review of all inorganic sample data, blank analysis results, matrix spike results, duplicate analysis results, ICP interference check results, calibration data, and detection limits.

6.2.2.2 Qualifiers

It is recommended that this data package be utilized only with the following qualifier statements:

- The following results are qualitatively questionable:

Constituent	Samples with Questionable Results
beryllium	All positive sample results
copper	MC3789, MC3795, and MC3798
zinc	MC3793 and MC3802
tin	MC3785 and MC3787
cadmium	All positive results except MC3787, MC3789, MC3791, MC3794, MC3799, MC3801, and MC3803
lead	All positive aqueous results except MC3791
iron	MC3802

The aforementioned results were designated questionable because there is evidence to doubt the presence of these constituents at concentrations less than or similar to the levels reported. However, it can be assumed that concentrations substantially greater than the levels reported cannot be present.

- Due to a calculation error, copper was reported in sample MC3784 incorrectly. The corrected value has been incorporated to the sample data summary.

ORIGINAL (Red)

- The reported concentration of arsenic, mercury, and manganese in sample MC3783 may not reflect the average present.

6.2.2.3 Findings

- Analysis of field blanks and laboratory preparation blanks revealed the presence of beryllium, copper, zinc, tin, cadmium, lead, and iron at sufficient quantities to question the results of the aforementioned samples.

- Duplicate analysis for sample MC3783 revealed poor precision for arsenic, manganese, and mercury.

6.2.2.4 Summary

The attached Quality Assurance Review has identified blank contamination, calculation errors, and poor precision for duplicate analysis as the primary areas of concern. Please see the accompanying Support Documentation appendix for specifics on the Quality Assurance Review.

Report prepared by Rock J. Vitale RV Date: December 6, 1984

ORIGINAL
(Red)

SECTION 7

ORIGINAL
(Red)

7.0 TOXICOLOGICAL EVALUATION

7.1 Summary

The major area of concern on the Stauffer-Bentonville site is the acid pond and intermittent drainage which ultimately flows into Flint Run Creek. Substantial levels of chromium, zinc, and iron were reported in the acid pond and intermittent drainage from both the acid pond and a lower pond. The lower pond drainage flows directly into Flint Run Creek and the excessive chromium, zinc, and iron concentrations reported in the sample may have adverse impacts on aquatic life in Flint Run Creek. Lower levels of the toxic metals, lead, cadmium, and cyanide, were also reported in the acid pond and acid pond discharge, but not the lower pond discharge, suggesting that these contaminants may pose less threat to aquatic fauna in Flint Run Creek. Various other site aqueous samples including springs and the drainage ditch proximate to the railroad tracks revealed notable levels of chromium, zinc, iron, or cyanide.

Previous information indicates that low pH conditions may exist in the acid pond and possibly in other surface waters on site. Note that variations in pH may affect the valence of chromium ion present (available information suggests that low pH conditions favor the less toxic Cr III ion), as well as the toxicity of other contaminants such as cyanide or iron. Excessively high or low pH may also, in and of itself, pose threats to aquatic life. It is important to note that the receiving water would be expected to possess some degree of buffering capacity, which would permit the neutralization of an acidic discharge to some extent.

In addition to potential adverse impacts on freshwater aquatic life, the concentrations of chromium reported in some site aqueous samples may be sufficiently high to be corrosive to the skin of sensitive individuals.

Organic analysis of site samples revealed limited evidence of low levels of polynuclear aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCBs). The reported concentrations of these contaminants should not pose substantial threats to human health or the environment via likely routes of exposure.

No organic or inorganic contaminants were reliably reported in the Thurston well, located south of the Stauffer-Bentonville site. Previous samples of the on-site wells revealed measurable concentrations of the carcinogen benzene as well as related aromatics, toluene and ethylbenzene. Current groundwater quality beneath the site cannot be ascertained as the on-site wells were inaccessible during the site inspection. It is possible that groundwater contamination with the previously noted aromatics still exists. Such contamination may have adverse impacts on area domestic wells. It is important to note that no benzene, toluene, or ethylbenzene was measured in any aqueous or sediment sample taken on the Stauffer-Bentonville site.

7.2 Support Data

A sample from the Thurston domestic well, located directly south of the Stauffer site, revealed no reliable evidence of any target contaminants above analytical detection limits. Previously reported groundwater contamination in on-site wells with the carcinogen benzene and related compounds toluene and ethylbenzene could not be confirmed as the on-site wells were inaccessible during the site inspection. It is possible that these contaminants are still present in groundwater beneath the site and that area domestic wells are being impacted by these contaminants. Note that area residents utilize cisterns and wells as potable sources, possibly reducing the numbers of households that may be affected by potential groundwater contamination. It is also important to note that no benzene, toluene, or ethylbenzene was reliably reported in any aqueous or sediment samples taken on the Stauffer-Bentonville site.

On-site samples revealed little evidence of any other organic contaminants. Low levels of the common urban contaminants, PAH, were reported in aqueous (about 2 to 8 ppb) and sediment (about 360 to 2,200 ppb) samples taken in close proximity to railroad tracks that run through the site. The presence of PAHs in these samples is not unexpected as PAHs are constituents of creosote, which is commonly used as a wood preservative on railroad ties. The levels of PAHs reported should not pose serious threats to human health or the environment via likely routes of exposure.

Low levels of PCB 1260 were reported in the lower pond inflow (260 ug/kg) and sump (220 ug/kg) sediment samples. PCB 1260 is a toxic and persistent compound that has been associated with liver cancer in rats and mice. Acute toxicity of PCB 1260 is relatively low; the major environmental hazard is long-term, low-level exposure. PCBs bind strongly to soil elements; they are not readily absorbed dermally following direct contact, nor are they significantly soluble in overlying water. The isolated, low levels of PCB 1260 reported on site should not pose serious threats to human health or the environment.

No other organic contaminants were reported in on-site samples at concentrations of concern. It is important to note that no carbon disulfide (the chief manufacturing product of Stauffer Chemical) was reported in any aqueous or sediment sample above analytical detection limits.

Inorganic analysis of site samples did reveal the presence of a number of contaminants at levels of concern. Substantial concentrations of chromium were reported in all but 1 aqueous on-site sample, including the acid pond discharge (2,553 ugl), the lower pond discharge (883 ug/l), the downstream drainage ditch (564 ug/l), the acid pond (542 ug/l), and spring no. 1 (118 ug/l).

Chromium exists primarily in 2 valence states in the aquatic environment, Cr III and Cr VI. Cr VI is produced by the oxidation of Cr III. Little Cr VI is found in nature and the majority of Cr VI in the environment is a result of industrial and domestic emissions. Cr VI is a strong oxidizing agent and, since it easily crosses biologic membranes, is highly toxic as well as a suspected human carcinogen.[1] cR III, on the other hand, is recognized as an essential trace element in humans and plays an important role in glucose metabolism.

ORIGINAL (Red)

As a result of greater toxicity (in most cases) of Cr VI, criteria protective of freshwater aquatic life have been developed for each valences state as follows: Cr VI - 7.2 ug/l, Cr III - 42 ug/l in soft water. The valence of the chromium species present on the Stauffer-Bentonville site cannot be determined as sample analysis does not distinguished between Cr III and Cr VI. In the environment, Cr III is the most stable form, and it has a strong tendency to form complexes with negatively charged organic or inorganic species. In natural waters, Cr III largely associates with particulate matter and is subject to sedimentation or filtration. Below pH 5, however, Cr III is soluble.[2]

Cr VI is soluble in water, but as a powerful oxidizing agent, tends to react with organic molecules (or other oxidizable substance) to form less toxic Cr III. This is especially true in an acidic medium.[3]

Previous information indicates that low pH conditions may exist in the acid pond (2.4) and other site surface waters (see section 3.2). Note that variations in pH may affect the valence state of chromium which predominates. If, in fact, acidic conditions (pH less than 5) do exist in Stauffer surface waters, the predominance of the less than toxic Cr III ion is suggested. While criteria protective of freshwater aquatic life are significantly higher for Cr III (42 ug/l in soft water vs. 7.2 for Cr VI), note that chromium concentrations in all surface water samples exceed both sets of protective criteria for chromium. One of the highest chromium concentrations (883 ug/l) was reported in the lower pond discharge which was sampled a short distance before entering Flint Run Creek, suggesting that the discharge may have adverse effects on aquatic fauna in the creek.

If the pH in the lower pond discharge to Flint Run Creek approaches that measured in the acid pond previously (2.4), the pH may, in itself, merit toxic consideration. The toxicity of many compounds is affected by changes in pH, and a range of 6.5 to 9 is considered sufficiently protective of freshwater aquatic life.[4] Outside of this range, fish suffer adverse physiological effects increasing in severity as the degree of deviation increases until lethal levels are reached. Note that the receiving water would be expected to possess some degree of buffering capacity which may neutralize an acidic discharge to some extent.

In addition to possible adverse effects on aquatic fauna, the concentrations of chromium reported on site may be corrosive to skin, causing slow to heal ulcers. Cr VI (as $K_2Cr_2O_7$) concentrations as low as 500 ug/l were irritating to individuals sensitized by repeated exposure to chromium compounds.[5] Cr VI is reduced to Cr III in the skin. Cr III is cleared from lower skin layers at a slow rate and subsequent reactions may occur years after the original exposure. As previously noted, the Cr species that predominates in on-site surface waters is affected by pH; however, the potential for reported chromium concentrations to be corrosive to sensitive individuals may exist.

In addition to chromium, several other metals and cyanide were reported in various surface water samples in excess of concentrations considered protective of aquatic life. Concentrations of iron and zinc substantially exceeded protective criteria in the lower pond discharge (Fe: 46,150 ug/l, Zn: 677 ug/l), spring no. 1 (Fe: 23,350 ug/l, Zn: 492 ug/l), spring no. 2 (Fe: 8,638 ug/l, Zn: 78 ug/l), acid pond (Fe: 9,900 ug/l, Zn: 692 ug/l), acid pond discharge (Fe: 151,300 ug/l, Zn: 1,874 ug/l), and downstream drainage ditch (Fe: 40,730 ug/l, Zn: 286 ug/l). Ambient Water Quality Criteria (AWQC) for the protection of freshwater aquatic life for iron and zinc are 1,000 and 47 ug/l, respectively. Note that some of the highest concentrations of these metals were reported in the lower pond discharge which flows directly into Flint Run Creek. Substantial concentrations of iron in surface waters may form flocs that coat the gills of fish and exert a smothering effect on fish eggs and botton-dwelling fish food organisms. Acutely toxic zinc concentrations induce cellular breakdown of the gills and possible clogging of the gills with miucous. Chronically toxic concentrations of zinc cause general enfeeblement and widespread histological change to many organs but not to gills.

ORIGINAL (Red)

A smaller number of aqueous samples revealed levels of cadmium, lead, or cyanide in excess of recommended criteria protective of aquatic life. Reported concentrations were as follows: spring no. 2, 16 ug/l cyanide; acid pond discharge, 4.8 ug/l cadmium and 72 ug/l lead; upstream drainage ditch, 14 ug/l cyanide; downstream drainage ditch, 12 ug/l cyanide. Respective AWQC for these contaminants are 1 ug/l and 2 ug/l for lead and cadmium in soft water, and 4.2 ug/l for cyanide. Note that the chromium, zinc, and iron concentrations reported in site surface waters exceeded respective AWQC to a far greater degree than did cadmium, lead, and cyanide concentrations. Also, no cadmium, lead, or cyanide was reliably reported in the lower pond discharge to Flint Run Creek. This information suggests that chromium, zinc, and iron may pose a more substantial threat to freshwater aquatic life in this case.

No other inorganic contaminants were reliably reported on site at concentrations of concern. No HNU readings above background were recorded on site.

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